

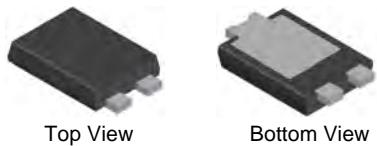
Features

- Designed as Bypass Diodes for Solar Panels
- Selectively Rated for 200°C Maximum Junction Temperature for High Thermal Reliability
- Patented Super Barrier Rectifier Technology
- High Forward Surge Capability
- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

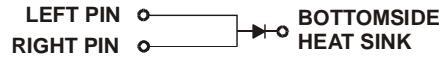
- Case: POWERDI5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.093 grams (approximate)

POWERDI5



Top View

Bottom View



Note: Pins Left & Right must be electrically connected at the printed circuit board.

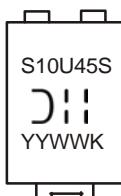
Ordering Information (Note 4)

Part Number	Case	Packaging
SBR10U45SP5-13	POWERDI5	5000/Tape & Reel
SBR10U45SP5-7	POWERDI5	1500/Tape & Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



S10U45S = Product Type Marking Code
 DII = Manufacturers' Code Marking
 K = Factory Designator
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 13 for 2013)
 WW = Week code (01 - 53)

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitance load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		
Working Peak Reverse Voltage	V_{RWM}	45	V
DC Blocking Voltage	V_{RM}		
RMS Reverse Voltage	$V_{R(\text{RMS})}$	32	V
Average Rectified Output Current	I_O	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms	I_{FSM}	275	A
Single Half Sine-Wave Superimposed on Rated Load			
Repetitive Peak Avalanche Power (1μs, +25°C)	P_{ARM}	30000	W

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance			
Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	73	°C/W
Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	31	
Operating Temperature Range	$V_R \leq 80\% V_{RRM}$	T _J	-65 to +150
	$V_R \leq 50\% V_{RRM}$		≤180
	DC Forward Mode		≤200
Storage Temperature Range	T_{STG}	-65 to +175	°C

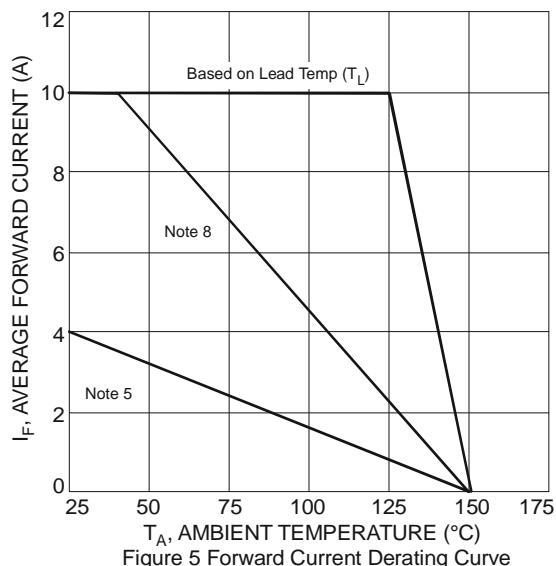
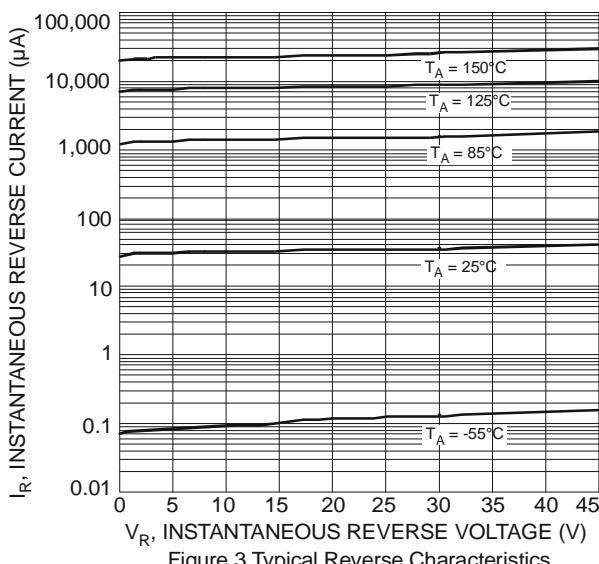
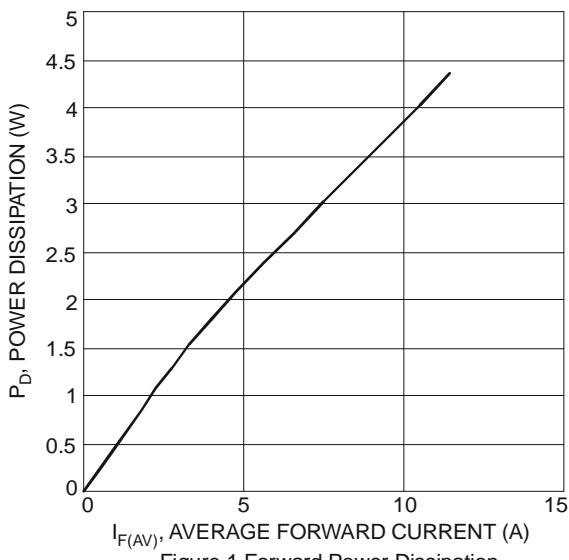
Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	45	—	—	V	$I_R = 0.3\text{mA}$
Forward Voltage Drop	V_F	—	—	0.42	V	$I_F = 8\text{A}, T_J = +25^\circ\text{C}$
		—	0.42	0.47		$I_F = 10\text{A}, T_J = +25^\circ\text{C}$
		—	0.38	0.41		$I_F = 10\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 7)	I_R	—	0.05	0.3	mA	$V_R = 45\text{V}, T_J = +25^\circ\text{C}$
		—	—	15		$V_R = 45\text{V}, T_J = +100^\circ\text{C}$
		—	28.0	75		$V_R = 45\text{V}, T_J = +150^\circ\text{C}$

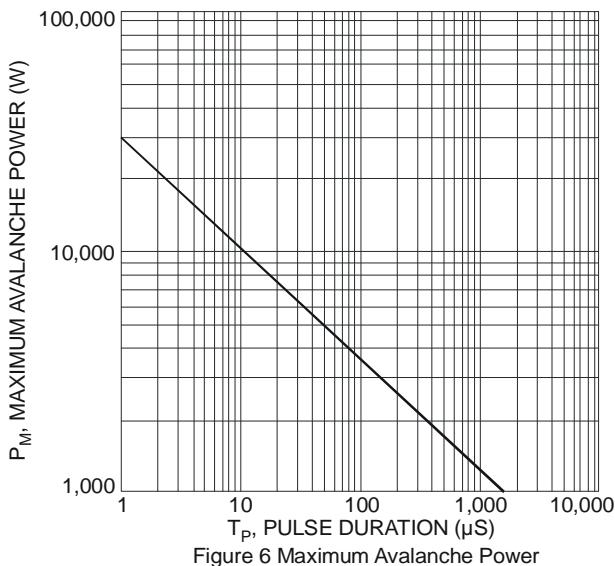
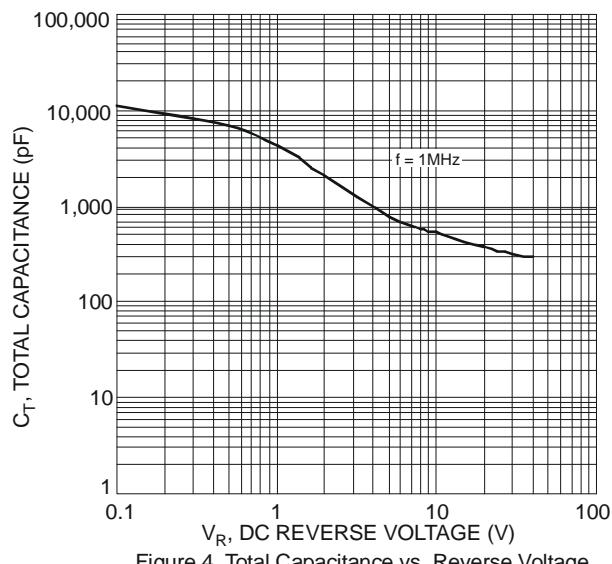
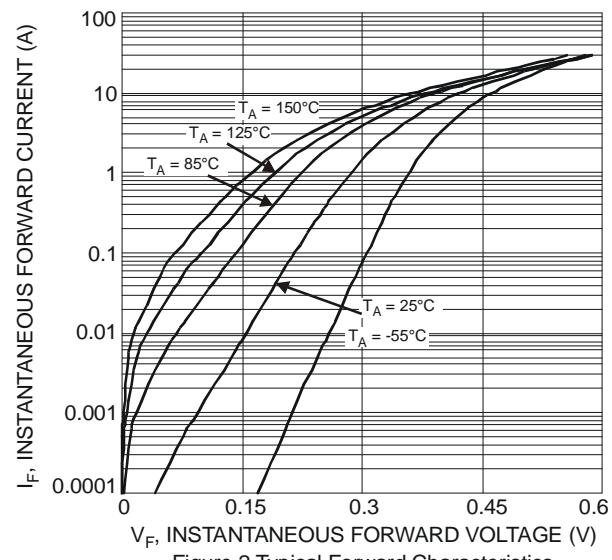
Notes: 5. FR-4 PCB, 2oz. Copper. Minimum recommended pad layout per <http://www.diodes.com>.

6. Polyimide PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 14.4mm

7. Short duration pulse test used to minimize self-heating effect.



Notes: 8. Device mounted on FR-4 substrate, 2oz copper, with 10cm x 10cm pad layout.



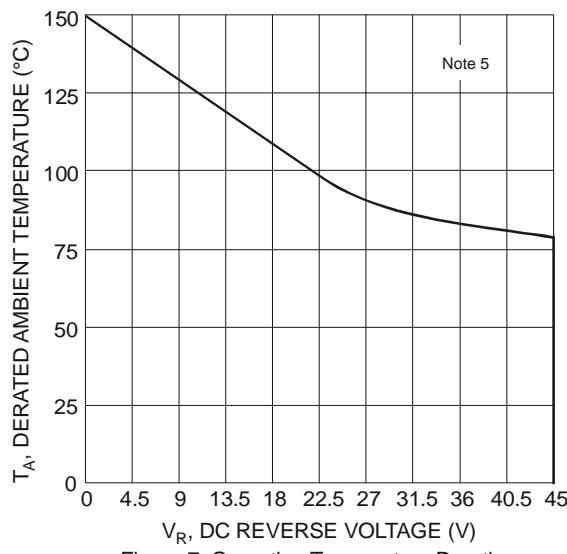
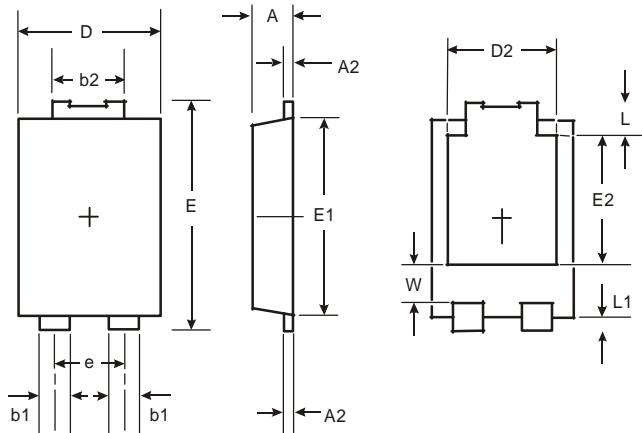


Figure 7 Operating Temperature Derating

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

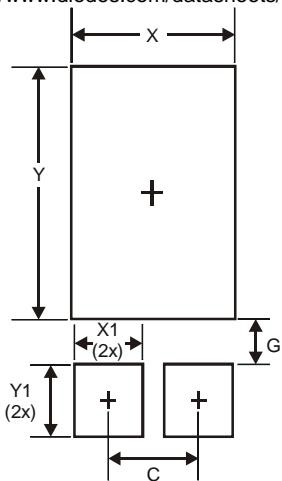


POWERDI5		
Dim	Min	Max
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	1.840
G	0.852
X	3.360
X1	1.390
Y	4.860
Y1	1.400

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Website :

Welcome to visit www.ameya360.com

Contact Us :

➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype ameyasales1 ameyasales2

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com